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(54) Elastomeric knitted pile fabrics

(57) A method for producing a warp or weft knitted fabric on a knitting machine, the fabric having a first, elastomeric fibrous component, a second, non-elastomeric, fibrous component and optionally a third or more, non-elastomeric, fibrous components characterised in that at least part of the second fibrous component is knitted into the fabric with a long float such that when the fabric is removed from the knitting machine, the elastomeric first component contracts such that the long floats of the non-elastomeric second component are forced into free standing loops to provide a loop pile on the fabric. Desirably the free standing loops are cropped to produce a pile fabric in which the second fibrous component is in essentially discontinuous lengths, each of which is in general associated with one stitch only.

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

GB 2 106 153 A

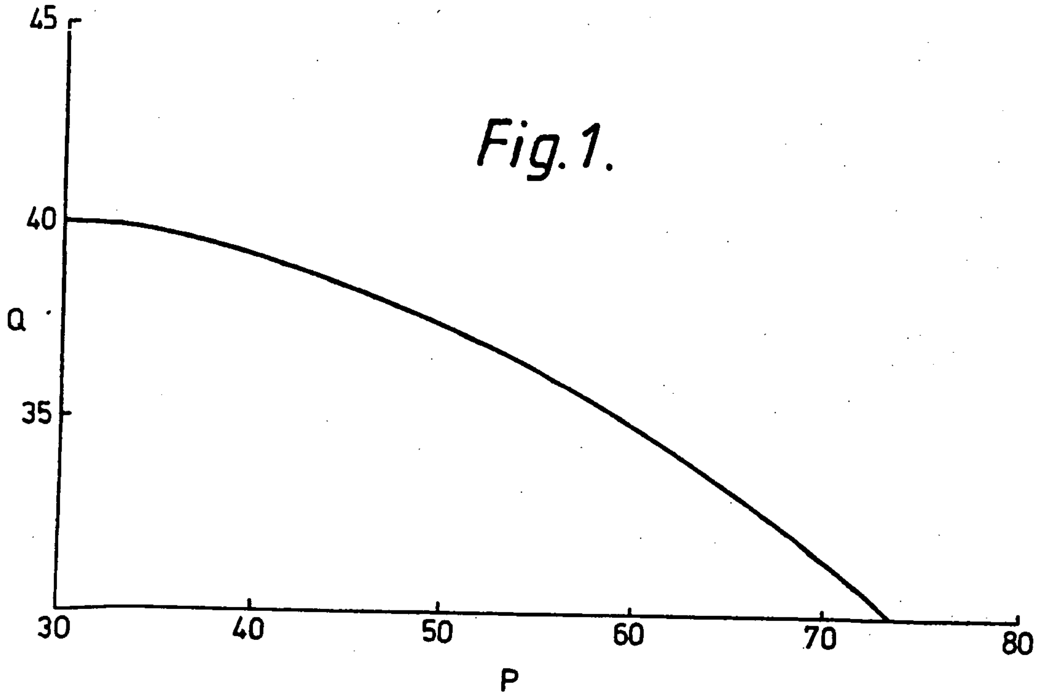
45
40
Q
35
30
40
50
60
70
80
P

Fig. 1.

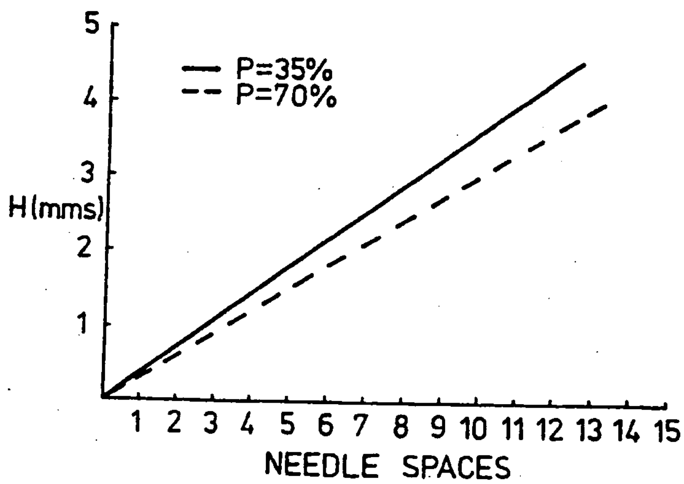
5
4
3
2
1
H(mms)
P=35%
P=70%
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
NEEDLE SPACES

Fig. 2.

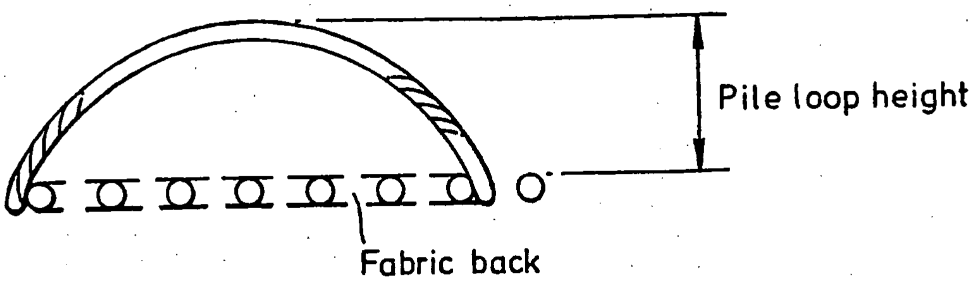
Pile loop height
Fabric back

Fig. 3.

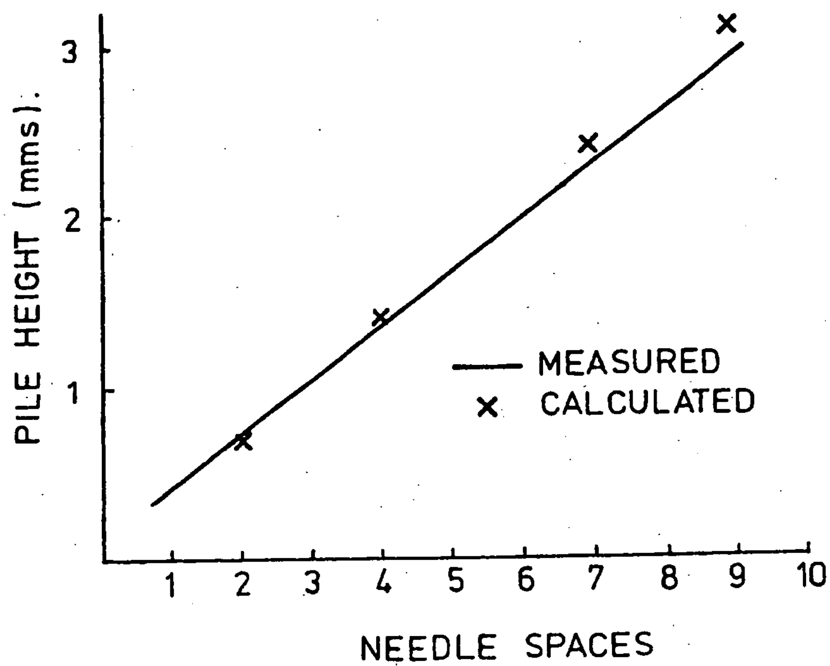
PILE HEIGHT (mms).
3
2
1
MEASURED
CALCULATED
1 2 3 4 5 6 7 8 9 10
NEEDLE SPACES

Fig. 4.

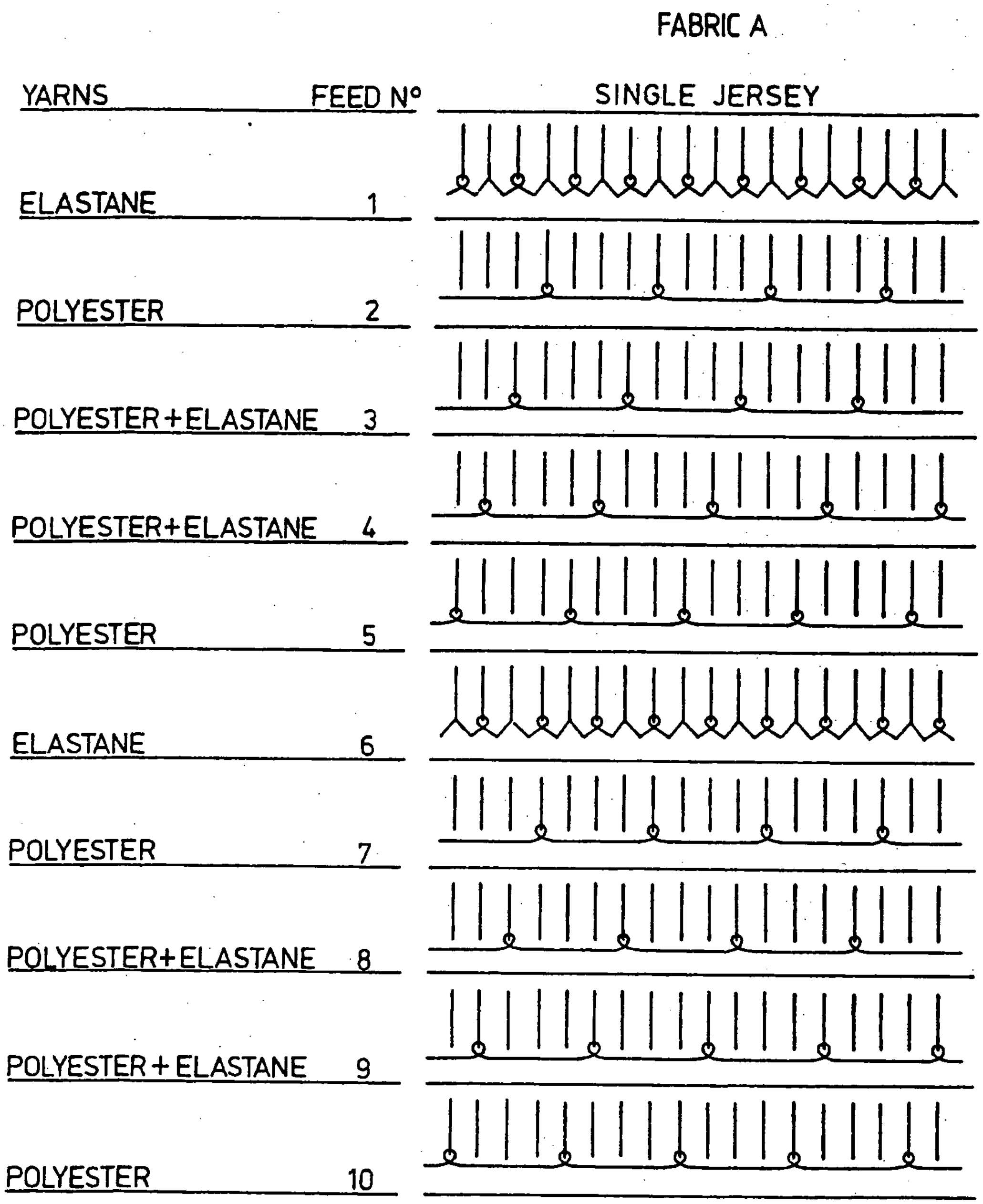
FABRIC A
YARNS
FEED N°
SINGLE JERSEY
ELASTANE 1
POLYESTER 2
POLYESTER + ELASTANE 3
POLYESTER+ELASTANE 4
POLYESTER 5
ELASTANE 6
POLYESTER 7
POLYESTER+ELASTANE 8
POLYESTER + ELASTANE 9
POLYESTER 10

Fig. 5.

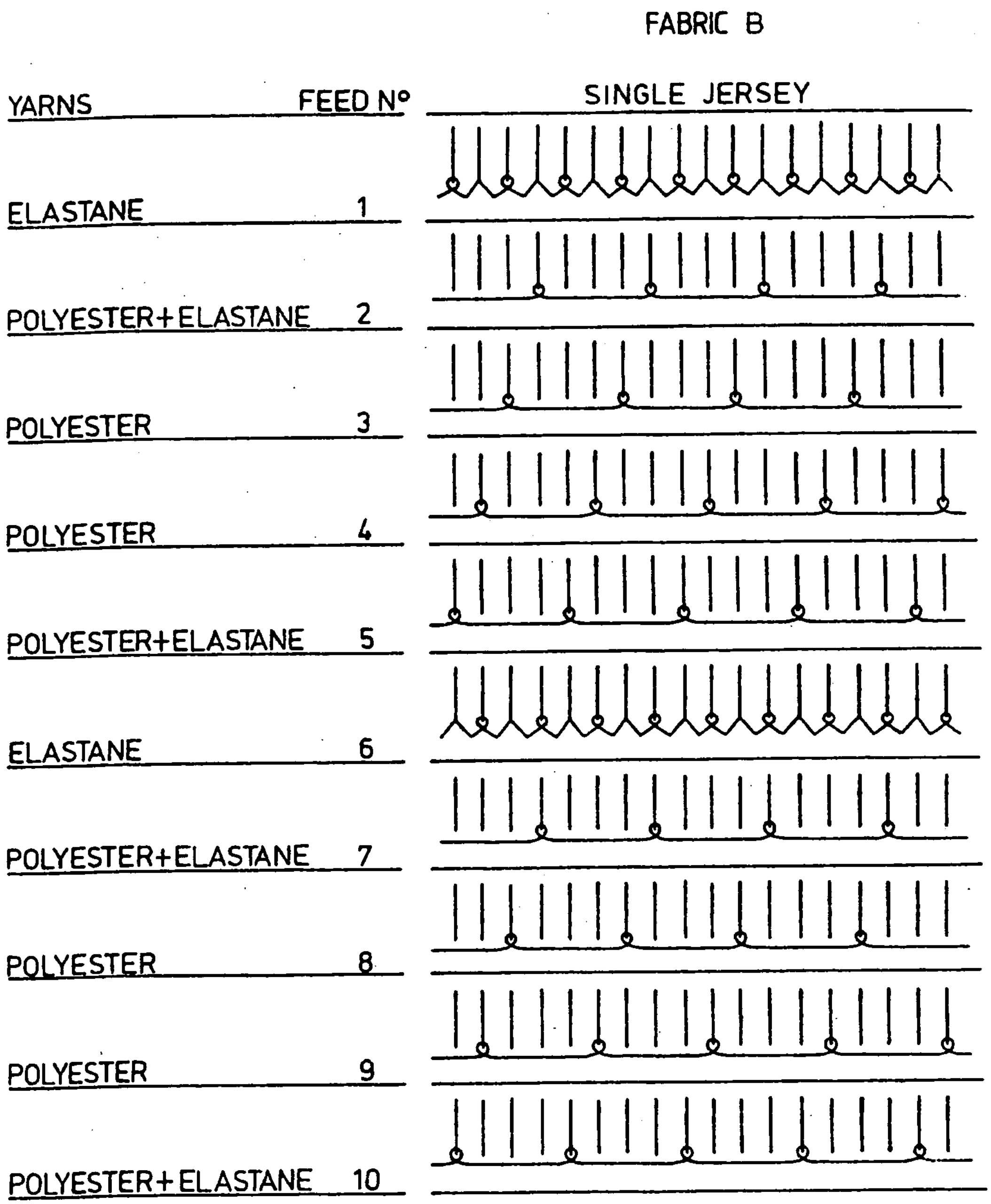
FABRIC B
YARNS
FEED N°
SINGLE JERSEY
ELASTANE 1
POLYESTER+ELASTANE 2
POLYESTER 3
POLYESTER 4
POLYESTER+ELASTANE 5
ELASTANE 6
POLYESTER+ELASTANE 7
POLYESTER 8
POLYESTER 9
POLYESTER+ELASTANE 10

Fig. 6.

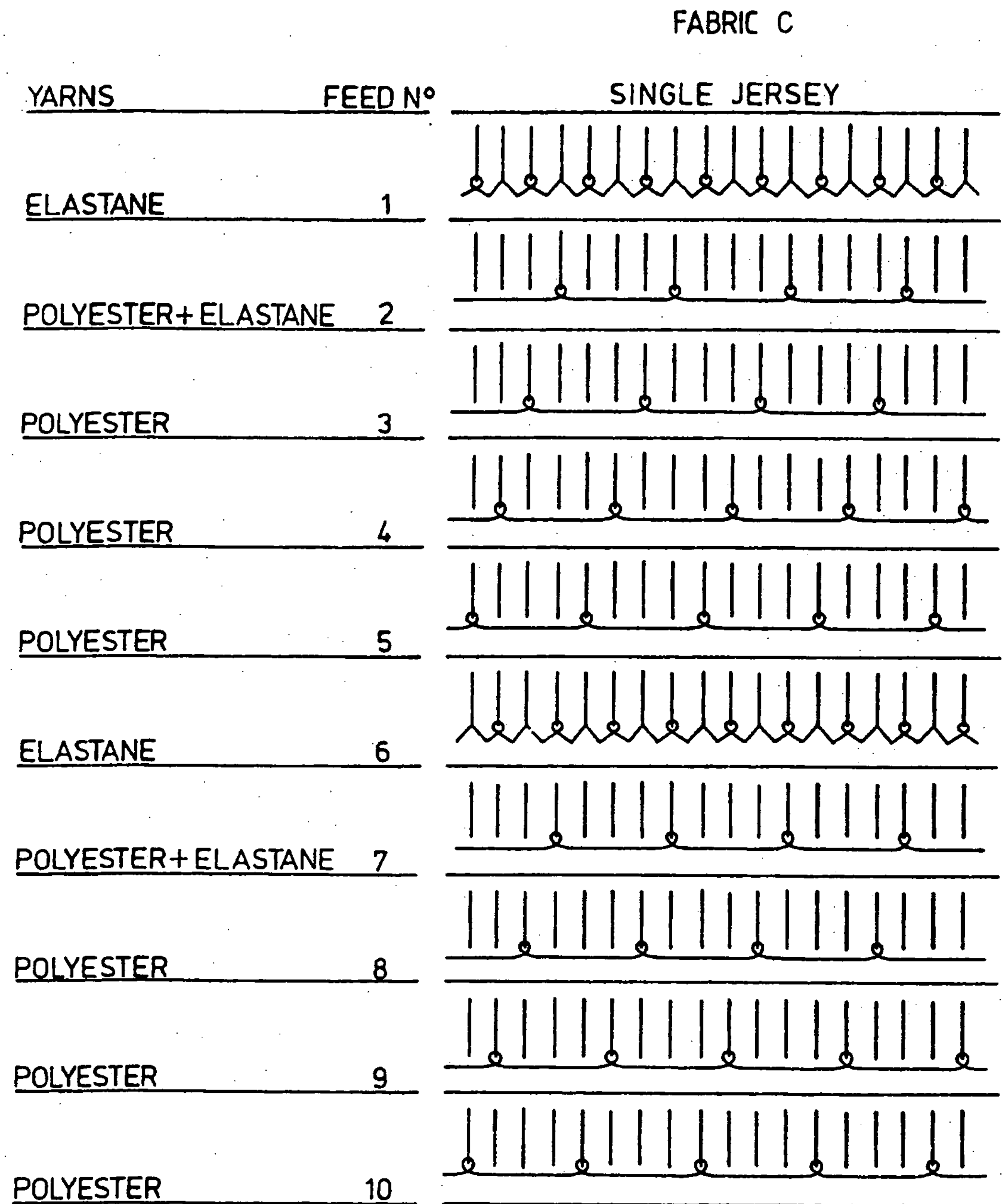
FABRIC C
YARNS
FEED N°
SINGLE JERSEY
ELASTANE 1
POLYESTER+ELASTANE 2
POLYESTER 3
POLYESTER 4
POLYESTER 5
ELASTANE 6
POLYESTER+ELASTANE 7
POLYESTER 8
POLYESTER 9
POLYESTER 10

Fig. 7.

2106153

FABRIC D

YARNS	FEED N°
ELASTANE	1
POLYESTER	2
POLYESTER	3
POLYESTER	4
POLYESTER+ELASTANE	5
ELASTANE	6
POLYESTER+ELASTANE	7
POLYESTER	8
POLYESTER	9
POLYESTER	10

SINGLE JERSEY

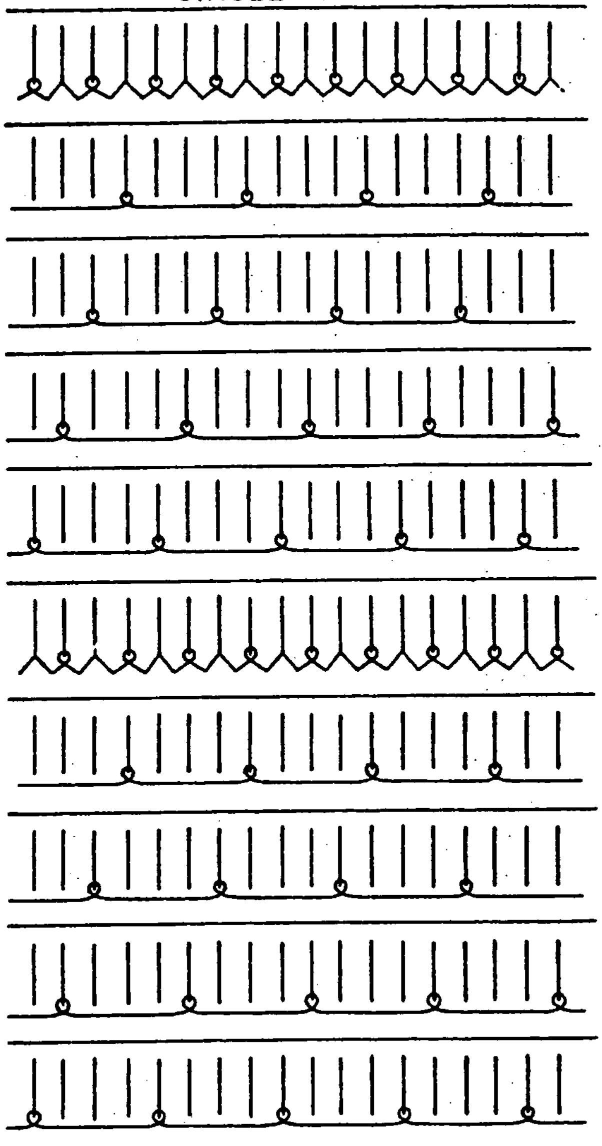

Fig.8.

SPECIFICATION
Elastomeric pil fabrics

This invention relates to novel elastomeric pile fabrics and to a method of producing such fabrics.

According to one aspect of the invention we provide a method for producing a fabric having a first, elastomeric, fibrous component, a second, non-elastomeric, fibrous component and optionally a third or more, non-elastomeric, fibrous component on a knitting machine characterised in that at least part of the second fibrous component is introduced into the fabric with a long float such that when the fabric is removed from the machine, the elastomeric first component contracts such that the long floats of the non-elastomeric, second component are forced into free standing loops to provide a loop pile on the fabric. As an optional further feature of the method, the free standing loops of the second component are cropped to provide a cut pile.

According to another aspect of the invention we provide an elastomeric fabric having a non-elastomeric cut or loop pile made by the above described method, such loop pile preferably being greater than 0.5 mm and more preferably greater than 1.0 mm.

With reference to a warp knitted fabric we use the term "long float" to mean that the second fibrous component is knitted into the fabric with at least a 1—0/3—4 notation. On a 21 gauge knitting machine, though the second fibrous component may be knitted into the fabric with a 1—0/3—4 notation, we prefer that it is knitted into the fabric with at least a 1—0/4—5 notation. However on a 28, 32 or 36 guage knitting machine, the second fibrous component is knitted into the fabric with at least a 1—0/4—5 notation but preferably with at least a 1—0/5—6 notation.

With reference to the knitting of a weft fabric, we use the term "long float" to mean that during knitting, the pile bar avoids a minimum of three needles.

The method of the invention can be carried out on either a warp or weft knitting machine. However, we have found that the method of the invention is particularly suited to the production of warp knitted fabrics using a conventional warp knitting machine having a bearded, compound or latched needle.

Accordingly in one embodiment of the invention we provide a method for producing a warp knitted fabric on a warp knitting machine, the fabric having a first, elastomeric, fibrous component, a second, non-elastomeric, fibrous component and optionally a third or more, non-elastomeric, fibrous component characterised in that at least part of the second fibrous component is knitted into the fabric with a long float such that when the fabric is removed from the knitting machine, the elastomeric first component contracts such that the long floats of the non-elastomeric second component are forced into free standing loops to provide a loop pile on the fabric. Desirably the free standing loops of the second component are cropped to provide a cut pile.

Warp knitted cut pile fabrics containing an elastomeric fibrous component are customarily made by brushing (loop raising) operations followed by cropping (cutting) the raised yarns. This results in only a proportion of the filaments in the yarns from which the pile is formed, being cut and accordingly the fabric so formed contains essentially continuous pile yarns in which only a proportion of the filaments therein are cut. In fabrics according to this invention, substantially all the filaments and in particular more than 90% and preferably more than 97% are cut in such a way as to result in discontinuous lengths of tufts of pile yarn. In general the discontinuous lengths of pile yarn are associated with only one stitch.

Accordingly we provide a warp knitted fabric containing an elastomeric fibrous yarn, a second fibrous yarn in the form of a cut pile and optionally a third or more fibrous yarn characterised in that more than 90%, and preferably more than 97%, of the filaments in the fibrous pile yarn have been cut into discontinuous lengths. In general, as mentioned above, each of the discontinuous lengths of pile yarn is associated with only one stitch.

Whilst in the above described method for producing a warp knitted fabric we have indicated that the second, non-elastomeric, fibrous component is knitted into the fabric with a long float it should be understood that this does not preclude knitting into the fabric, using appropriate needle bars, other components with long floats.

Though the method of the invention is particularly suited to the production of a simple warp knitted fabric, more complicated fabrics can be produced by means of the usual warp knitting patterning devices of part set threading or pattern warping for all of the bars on the knitting machine. Furthermore lower fabric weights and pile densities having a uniform appearance can be produced by uniformily part set threading the bar used to lay the pile. For example, a 1 in, 1 out repeat on the pile bar would halve the pile density.

Typically, however, an elastomeric yarn (first component) is knitted with full set threading on bar 1 (the back bar), with a covering non-elastomeric yarn (third component) with full set threading on bar 2 (the middle bar) and a non-elastomeric pile yarn (second component) with full set threading on bar 3 (the front bar) which will lay the yarn with long floats on the surface of the technical back of the fabric. The third component ensures that the elastomeric yarn remains hidden and protected against physical damage and overstretching.

For a typical 28 gauge, 32 gauge or 36 gauge fabric, the elastomeric yarn will be knit with a

1—0/1—2 notation and the yarn on bar 2 with a 1—2/1—0, 2—3/1—0 or 3—4/1—0 notation and the yarn on bar 3 with between a 1—0/4—5 and 1—0/9—10 notation, for example a 1—0/5—6, 1—0/6—7 or 1—0/7—8 notation. In this way the second fibrous component is knitted into the fabric with a long float. However different throws (floats) and bar phasings can be used in order to modify the construction of the fabric to produce either a decorative or functional effect, for example a two needle overlap can be used on bar 2 for extra fabric power. Furthermore laying in techniques can be used for the various bars.

Alternatively, the elastomeric yarn could equally well be knitted on other than the back bar of a three or more bar knitting machine, for example on the middle bar of a three bar knitting machine in which case the elastomeric yarn might be knitted with a 1—0/1—2 notation, the second component (say nylon) with a 1—0/7—8 notation on the front bar and the third component (say nylon) with a 3—4/1—0 notation on the back bar. If suitable heat setting conditions are used, the fabric produced will have a more rigid final structure than the earlier described fabric. If desired the rigidity of the fabric might be increased further by using the same notation on a four bar machine but with a fourth component (say nylon) having a 1—0/1—2 notation on the fourth bar. Rigidity of the fabric will be particularly desirable if the fabric is being used for upholstery because the presence of excessive residual stretch would be a hindrance with such an end use.

As the knitted fabric comes from the needles of the knitting machine the elastomeric component relaxes and the second component is forced into free standing loops. The loop height can be enhanced and made more uniform by various mechanical and thermal processes associated with elastomeric fabrics. In particular, the fabric after leaving the knitting machine may be treated with steam or a liquid in a manner which enhances shrinkage (contraction) of the elastomeric component in the fabric.

The fabric may be dyed and finished by methods conventionally used with stretch fabrics.

Desirably the free standing loops of the second component in the knitted fabric are cropped in a conventional manner to provide a cut pile. Cropping may be carried out at any suitable stage of the process, for example immediately after knitting or after steaming or mechanical relaxation or after the heat setting or after dyeing.

Various fibrous components may be used in the construction of the fabric.

Whilst the first, elastomeric, component can be a natural material we prefer a synthetic elastomeric filament yarn. The filament yarn used is preferably bare. Alternatively, however, it may be wrapped. A suitable filament decitex can be selected in the range 10—200 but we prefer that the elastomeric yarn has a decitex in the range 22 to 56.

The second and third components of the fabric may either be filament or staple yarns and may be either natural or synthetic. The second component, ie the pile yarn, will typically have a decitex in the range 22 to 100 when the fabric is destined for apparel purposes and could have a decitex of 300 or more when the fabric is destined for upholstery. When a third component is used in the fabric then this will have a decitex which is related to that of the decitex of the elastomer in order to reflect the aesthetics and practicality of the proposed end use for the fabric.

In should also be understood that whilst the presence of an elastomeric component in the fabric is essential during the production of the fabric it might be that the end use envisaged for the fabric might not require the fabric to have elastomeric properties. When this is the case then the elastomeric properties of the first component may be reduced or destroyed during the processing of the fabric, for example by high temperature dyeing or heat setting. Alternatively the elastomeric properties of the first component can be inhibited by the choice of a suitable fabric construction particularly in relation to the third component.

Knitted fabrics produced in accordance with the invention may be used for a variety of end uses more particularly for making up into swim wear, leisure wear, sportswear, lingerie, industrial and domestic upholstery and automobile furnishings.

A guide to the choice of the pile bar knitting notation, for a specified knitting gauge, to give a loop suitable for cropping to give desired fabric aesthetics, can be obtained by numerical computation as follows:—

$$\text{Let 'L'} = \frac{\text{number of needle spaces to be spanned}}{\text{machine gauge (needles/inch)}}$$

$$\text{Let 'P'} = \frac{\text{knitted wales/cm} \times 100\%}{\text{wales/cm as presented to the cropping machine}}$$

Let 'Q' be the value corresponding to 'P' on the graph shown in Fig 1.

$$\text{Let 'H', the pile height,} = \frac{Q \times L \times 25.4 \text{ mm}}{100}$$

'H' can be chosen to give a pile height potential appropriate to the desired aesthetic and end us . Of course, the thickness and texture of the ground yarns, yarn shrinkage and contraction before cropping, type of knitting needle and the precise knitting conditions of bars other than the pile bar can affect the relationship between calculated (H) and the actual heights of the pile loops above the fabric back (Fig 3) and so the calculated value of pile loop height cannot be precise.

To simplify calculations, development charts can be devised relating 'H' to the number of needles spanned on the pile underlap for different values of P. This is illustrated in Fig 2 for a 28 gg (28 needles/inch) tricot warp knitting machine using values of P of 35% and 70%.

The invention will now be described by way of the following Examples:—

EXAMPLE 1

This Example illustrates the effect of knitted course level and of the phasing of the middle guide bar on fabric properties.

A three bar 28 gg bearded needle Mayer warp knitting machine Model No K4—WPS—T—J was loaded with 2320 threads per bar of 44 decitex elastomer (T136 Lycra) filament yarn on the back bar, 22 decitex 7 filament semi-dull circular nylon 66 yarn on the middle bar and 44 decitex 13 filament semi-dull circular nylon 66 yarn on the front bar. (Lycra is a Trade Mark of E I Du Pont de Nemours and Company).

The knitting machine was set up to various conditions in turn to provide a number of fabrics. These conditions are specified in Table 1.

TABLE 1

Piece No.	Back Bar		Middle Bar		Front Bar		Courses (—/cm)	Racks knitted
	Notation	Run In	Notation	Run In	Notation	Run In		
1	1—2/1—0	40	1—0/2—3	160	1—0/7—8	383	25	140
2	1—2/1—0	39.3	1—0/2—3	156	1—0/7—8	377	27.6	45
3	1—2/1—0	39.3	1—0/2—3	154	1—0/7—8	371	39	45
4	1—2/1—0	39.3	2—3/1—0	154.5	1—0/7—8	373.5	30	45
5	1—2/1—0	41.4	2—3/1—0	158	1—0/7—8	381	27.6	45
6	1—2/1—0	40	2—3/1—0	159	1—0/7—8	384	25	140

NOTE: (1) Run ins are quoted in cm/rack. The run in of the elastomer filament yarn on the back bar is specified in the relaxed state.

(2) The courses per cm given are defined at the sinker by the usual machine settings.

After removal of the fabrics from the knitting machine the elastomer yarn contracted so causing the component which had been knitted on the front bar to contract and so form into a dense loop pile having a height above the stitches of approximately 2 mm in each case.

All the pieces of fabric were linked together to give a total of 460 racks in the fabric length. This continuous length of fabric was then passed down a stenter, in steam at 100°C, at 95 cm width and 35% overfeed followed by a further stenter pass, at 195°C and 60 secs exposure, at 1 m width and 10% overfeed. The resulting relaxed, heat set fabrics were then given two passes on a cropping machine to cut off the tops of the loop pile to leave a virtually completely cut pile.

The fabric pieces were then dyed together at 105°C in a Softflow jet dyeing machine at a liquor ratio of 15:1 using dyestuffs and chemical auxiliaries commonly used for elastomeric fabrics. The now mid-blue fabrics were dried at 1 m wide at 140°C.

I he extensions and moduli of the fabrics were measured by the following method using an Instron Tensile Testing machine at a constant rate of extension. Three specimens, 150 mm x 50 mm with the longer dimension paralleling the wales were cut from each fabric piece and conditioned for 16 hours and tested at 65% Relative Humidity and 61°C. The machine was adjusted so that the distance between contact lines of the jaws was 10 cm and the cross head and chart speeds were set at 50 cm/min with the machine set to cycle between zero extension and a maximum load of 3.6 kg. A hysteresis graph for two cycles was produced. From the second load curv , the extension at 3.6 kg (warp modulus) and the loads at 20%, 40%, 60%, 80% and 100% extension were measured. On samples cut at right angles to the above, the extension at 3.6 kg was also determined (weft modulus).

Details of the finished fabrics, which all had a pleasing crushed appearance with a dense, w ll cropped pile, are listed in Table 2.

TABLE 2

Piece No.	Wales × Course (–/cm)	Elastomer (%)	Weight (gm/m²)	Modulus %		Load (gm) at (%) Stretches of				
				Warp	Weft	20	40	60	80	100
1	25 × 42	11.4	338	198	133	120	220	290	380	500
2	25 × 44	11.6	355	191	137	120	220	310	410	570
3	25 × 44	11.7	354	190	120	120	210	310	440	590
4	25 × 38	11.4	349	214	157	120	200	290	390	500
5	25 × 41	11.3	342	223	135	130	210	290	380	480
6	24 × 41	11.6	329	223	147	83	180	250	340	460

EXAMPLE 2

The same knitting machine as used in Example 1 was loaded with the same yarns on the back and middle bars as for Example 1. 44 decitex 20 filament bright trilobal nylon 66 yarn was loaded at 2320 ends to the front bar. Knitting notations were back bar 1—0/1—2, middle bar 2—3/1—0 and front bar 1—0/7—8 with the machine set to knit 25 courses/cm. Run ins per rack were back bar 40 cm (relaxed), middle bar 150 cm and front bar 392 cm.

The resulting fabric was processed as that in Example 1 to give a pleasing highly lustrous crushed pile appearance of 275 gm/m² weight. The pile was dense. Moduli as defined in Example 1 were warp 175% and weft 110%. The loads at 20, 40, 60, 80, 100% stretch were 73, 213, 347, 483 and 633 grams respectively. The fabric contained 12% elastomer.

EXAMPLE 3

This example illustrates the use of a 2 needle overlap construction on the middle bar. The knitting machine of Example 1 was loaded with the same yarns on the same bars as in that Example. This fabric was knitted to the specifications of Table 3.

TABLE 3

Piece No.	Back Bar		Middle Bar		Front Bar		Courses (–/cm)	Racks knitted
	Notation	Run In (cm)	Notation	Run In (cm)	Notation	Run In (cm)		
1	1–0/1–2	40	3–1/0–2	244	1–0/7–8	384	25	230
2	1–0/1–2	40	4–2/0–2	272	1–0/7–8	394	25	230

NOTE: Run ins are quoted in cm/rack. The run in of the elastomer filament yarn on the back bar is specified in the relaxed state.

The two fabric lengths were joined together then dyed and finished and tested as per Example 1 except that a liquor ratio of 17:1 was used in dyeing and that the fabrics were tumbled in a steam tumbling machine after the first crop and before the second crop. Again the fabrics were substantially completely cropped. In the finished state both fabrics had a pleasing crushed cut pile appearance with piece No 2 being less lustrous and fuller in handle than piece No 1. The fabric was effectively completely cropped.

Details of the finished fabrics are given in Table 4.

TABLE 4

Piece No.	Wales × Courses (–/cm)	Elastomer (%)	Wt. (gm/m²)	Modulus %		Load (gm) at % Stretches of:				
				Warp	Weft	20	40	60	80	100
1	22 × 37	9.9	299	79	45	230	580	1480	–	–
2	23 × 36	8.9	344	109	120	180	380	720	1370	2630

EXAMPLE 4

The knitting machine of Example 1 was set up as described in that Example but using a front bar of 22 decitex 7 filament semi-dull circular nylon 66 yarn as well as having a middle bar threaded with this yarn. The fabrics were knitted to the specifications given in Table 5.

TABLE 5

Piece No.	Back Bar		Middle Bar		Front Bar		Courses (–/cm)	Racks knitted
	Notation	Run In (cm)	Notation	Run In (cm)	Notation	Run In (cm)		
1	1–0/1–2	40	2–3/1–0	156	1–0/7–8	370	28	230
2	1–0/1–2	40	1–2/1–0	114	1–0/7–8	370	28	115
3	1–0/1–2	40	2–3/1–0	156	1–0/6–7	370	28	115

NOTE: Run ins are quoted in cm/rack. The run-in of the elastomer filament yarn on the back bar is specified in the relaxed state.

After steam relaxation then heat setting (195°C) piece number 3 was cropped once whilst pieces 1 and 2 were cropped, tumbled in steam, then cropped again. The fabrics were dyed as for Example 1 but at a liquor ratio of 36 to 1. Dye temperature was 105°C. The resulting fabrics all gave a substantially uncrushed pile. After sampling the fabrics were returned to the jet dyeing machine at 110°C for 15 minutes at a liquor to goods ratio of 15 to 1 to yield pleasant crushed blue velour fabrics. Piece 3 gave a slightly more bristly hand than pieces 1 and 2. Properties of the crushed fabrics are set out in Table 6.

TABLE 6

Piece No.	Wales × Courses (–/cm)	Elastomer (%)	Wt. (gm/m²)	Modulus %		Load (gm) at % Stretches of:				
				Warp	Weft	20	40	60	80	100
1	28 × 42	16	263	232	136	120	190	250	330	430
2	29 × 48	18	279	158	240	120	220	340	490	700
3	30 × 49	17.5	304	275	151	100	190	270	330	410

EXAMPLE 5

This illustrates the use of polyester filament yarn.

The knitting machine of Example 1 was loaded at 2320 threads per bar with 44 decitex elastane (T136 Lycra) on the back bar, 22 decitex 10 filament circular extra dull polyester (ICI T6001) on the middle bar and 44 decitex 30 filament circular dull polyester (ICI T5001) on the front bar. The knitting machine was set up to the conditions of Table 7.

TABLE 7

Piece No.	Back Bar		Middle Bar		Front Bar		Courses (–/cm)	Racks knitted
	Notation	Run In (cm)	Notation	Run In (cm)	Notation	Run In (cm)		
1	1–0/1–2	40	2–3/1–0	169	1–0/7–8	378	25	300
2	1–0/1–2	40	2–3/1–0	162	1–0/6–7	329	25	170

NOTE: Run ins are quoted in cm/rack. The run-in of the elastomer filament yarn on the back bar is specified in the relaxed state.

The resulting fabrics were steam relaxed then heat set at 165°C at 1 metre width before cropping. Substantially all the loops were cut. The cropped fabrics were soft flow jet dyed at 105°C for 60 minutes using dyestuffs and auxiliaries sutiable for this polyester and at pH 5.5 with a liquor ratio of 15

to 1. After reduction clearing at pH 10 the fabrics were then heat set at 195°C. The resulting mid-blue cloths had a pleasing crushed appearance and a soft clinging hand. Fabric properties are given in Table 8.

TABLE 8

Piece No.	Wales × Courses (−/cm)	Elastomer (%)	Weight (gm/m²)	Modulus (%)		Load at % Stretch of:				
				Warp	Weft	20	40	60	80	100
1	25 × 42	12.7	299	235	164	180	290	370	470	560
2	26 × 45	11.7	318	252	161	130	210	320	400	480

EXAMPLE 6

This Example illustrates the effect of changing the length of the yarn float on the bar knitting the pile loop.

The knitting machine and yarns of Example 5 were used with the same threadings. The back bar threaded with the elastane was set to knit a 1—0/1—2 notation at a relaxed run in of 40 cm/rack. The middle bar threaded with the 22 decitex polyester was set to knit a 2—3/1—0 notation at a run in of 163 cm/rack. The front bar notation was successively changed and 12 racks of fabric knitted at each notation. Front bar conditions used were:—

FRONT BAR NOTATION	RUN IN (CM)
1—0/4—5	244
1—0/5—6	290
1—0/6—7	328
1—0/7—8	378
1—0/8—9	419
1—0/9—10	458

The knitted course level at the sinkers defined by machine settings was 25/cm.

The fabric was steam relaxed and then heat set at 1 metre width as in Example 5. The height of the pile loops above the fabric back (Fig 3) was measured and this plotted graphically against the needle spaces spanned for each front bar notation knitted (Fig 4). The height of the pile loops can be seen to correspond closely with the values of H calculated from the formula set out previously and marked on Fig 4.

The fabric was then cropped using cropper settings appropriate to each pile loop height. For the longer pile bar floats, zones containing a short cut pile height were deliberately produced adjacent to zones containing long pile heights. The fabric was then dyed at a liquor ratio of 30:1 and dried according to the method of Example 5.

The fabrics all had a plain uncrushed appearance and had all cropped satisfactorily. The longest pile loops, eg 1—0/9—10 notation, resulted in both a long rich cotton-like pile and a shorter, less luxurious pile fabric according to the cropping height used. The shortest pile loop, 1—0/4—5 notation, gave a single, very short, but serviceable pile fabric.

EXAMPLE 7

This Example illustrates the cropping of fabrics both before and after dyeing and of the use of beam dyeing.

A 28 gg 3 bar Mayer bearded needle machine Model No K4—WPS—T—J was full set threaded on the back bar with 2320 ends of 44 decitex elastane (T136 Lycra) and set to knit a notation of 1—0/1—2 at a relaxed run in of 40 cm/rack. The middle bar was full set threaded with 22 decitex monofilament nylon 66 and set to knit a notation of 2—3/1—0 at a run in of 156 cm/rack. The front bar was full set threaded with a 44 decitex 13 filament round cross section semi-dull nylon 66 yarn. The front bar notation was 1—0/7—8 at a run in of 376 cm/rack. The fabric was knitted at 25/cm at the sinker as defined by machine settings.

470 racks of fabric were knitted. The fabric was steam relaxed and heat set at 107 cm width. Approximately half the fabric was cropped and then the total fabric length was batched on to a beam

and dyed mid-blue at 105°C for 60 minutes. The fabric was then removed from the beam and dried on a stenter at 140°C. The cropped section of the pile was laid uniformily down in a unidirectional mann r to give a plain cut pile fabric. This section of the fabric was then placed in a steam tumbling machin t produce a softer fabric with an attractive uniform pile. The uncut dyed section of the fabric was then cropped to give a plain cut pile fabric.

EXAMPLES 8—11

A 28 gg single jersey weft knitting machine was loaded with 76 decitex 30 filament circular cross section polyester yarn and with a wrapped elastane yarn (78 decitex Lycra wrapped with 44 decitex nylon 66). The yarns were loaded and knitted to the 4 10 feed repeat constructions shown in conventional notation in the attached Figures 5, 6, 7 and 8 for Fabrics A, B, C and D. After knitting the fabrics were steam relaxed. All yielded stretch fabrics with pile loops. The pile loops on Fabrics A and B were largest and most suitable for further operations such as cutting.

CLAIMS

1. A method for producing a fabric having a first, elastomeric, fibrous component, a second non-elastomeric, fibrous component and optionally a third or more, non-elastomeric, fibrous components on a knitting machine characterised in that at least part of the second fibrous component is introduced into the fabric with a long float such that when the fabric is removed from the machine, the elastomeric first component contracts such that the long floats of the non-elastomeric, second component are forced into free standing loops to provide a loop pile on the fabric.

2. A method for producing a warp knitted fabric on a warp knitting machine, the fabric having a first, elastomeric, fibrous component, a second, non-elastomeric, fibrous component and optionally a third or more, non-elastomeric, fibrous components characterised in that at least part of the second fibrous component is knitted into the fabric with a long float such that when the fabric is removed from the knitting machine, the elastomeric first component contracts such that the long floats of the non-elastomeric second component are forced into free standing loops to provide a loop pile on the fabric.

3. A method for producing a warp knitted fabric as claimed in Claim 2 characterised in that the second fibrous component is knitted into the fabric with at least a 1—0/4—5 notation.

4. A method for producing a warp knitted fabric as claimed in Claim 3 characterised in that the second fibrous component is knitted into the fabric with at least a 1—0/5—6 notation.

5. A method for producing a warp knitted fabric as claimed in any one of the preceding claims characterised in that the fabric after leaving the knitting machine is treated with either steam or a liquid in a manner which enhances contraction of the elastomeric component in the fabric.

6. A method for producing a warp knitted fabric as claimed in any one of the preceding Claims characterised in that the fabric after leaving the knitting machine is subjected to a heat setting or high temperature dyeing process in order to reduce or destroy the elastomeric properties of the first component.

7. A method for producing a cut pile knitted fabric as claimed in any one of Claims 1 to 6 characterised by a subsequent step of cropping the free standing loops to provide a cut pile on the fabric.

8. A loop pile knitted fabric made in accordance with the method claimed in any one of Claims 1 to 6 and having a loop pile height greater than 0.5 mm.

9. A loop pile knitted fabric made in accordance with the method claimed in any one of Claims 1 to 6 and having a loop pile height greater than 1.0 mm.

10. A cut pile knitted fabric made in accordance with the method claimed in Claim 7.

11. A warp knitted fabric containing an elastomeric fibrous yarn, a second fibrous yarn in the form of a cut pile and optionally a third or more fibrous yarn characterised in that more than 90% of the filaments in the fibrous pile yarn have been cut into discontinuous lengths.

12. A warp knitted fabric as claimed in Claim 11 characterised in that more than 97% of the filaments in the fibrous pile yarn have been cut into discontinuous lengths.

13. A warp knitted fabric as claimed in either Claim 11 or Claim 12 characterised in that each discontinuous length of the pile yarn is associated with only one stitch.

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